LITEMAX

Sunlight Readable LCD!

ENRICH YOUR VISUAL WORLD…

DURApixel™ by LITEMAX Wide Temp LED Backlight

RoHS·WEEE LITEMAX COMPLIANT

LITEMAX SLG2325

Sunlight Readable 23” LED B/L LCD

User Manual

(1st Edition 2014/Apr/14)

All information is subject to change without notice.

Approved by	Checked by	Prepared by

LITEMAX Electronics Inc.
8F., No.137, Ln. 235, Baoqiao Rd., Xindian Dist., New Taipei City 23145, Taiwan
Tel : 886-2-8919-1858
Fax: 886-2-8919-1300
Homepage: http://www.litemax.com

RECORD OF REVISION

Version and Date	Page	Old Description	New Description	Remark
Apr,14,2014	all		Initial Release	

Contents

RECORD OF REVISION 2
Contents 3
1.0 GENERAL DESCRIPTION..... 4
2.0 Electrical characteristics..... 6
3.0 OPTICAL SPECIFICATION 16
4.0 AD6038GDP SPECIFICATIONS & OSD Functions 19
5.0 MECHANICAL DRAWING..... 30
6.0 PRECAUTIONS..... 31

1.0 GENERAL DESCRIPTION

SLG2325 is 23” wide color TFT-LCD module as active switching devices with 1,000nits LED backlight powered by Durapixel™ technology. This module has a 23 inch diagonally measured active area with Full HD resolutions (1920 horizontal by 1080 vertical pixel array). Each pixel is divided into RED, GREEN, BLUE dots which are arranged in vertical stripe and this module can display 16.7M colors.

FEATURES

- Sunlight Readable
- LED Backlight
- High Shock & Vibration Resistance
- Low Power Consumption
- High Uniformity
- Low EMI Noise
- Wide Dimming
- Life Expectancy

Applications

- Gamming

GENERAL SPECIFICATIONS

Model No.	SLG2325
Description	23" Wide TFT LCD, LED Backlight 1000 nits, FHD
Display Area (mm)	509.18 (H) x 286.41(V)
Brightness	1,000 cd/m^2
Resolution	1920 x 1080 (FHD)
Contrast Ratio	1300 : 1
Pixel Pitch (mm)	0.2652(H) x 0.2652(V)
Viewing Angle	178°(H), 178°(V)
Display Colors	16.7M colors
Response Time (Typical)	14 ms
Sync	LVDS
Power Consumption	42W
Dimensions (mm)	536.2(W) x 314.9(H) x 50(D)mm
Weight (Net)	5Kg

SLG= Panel+LED Driving Board+Control Board+Housing

ABSOLUTE MAXIMUM RATINGS

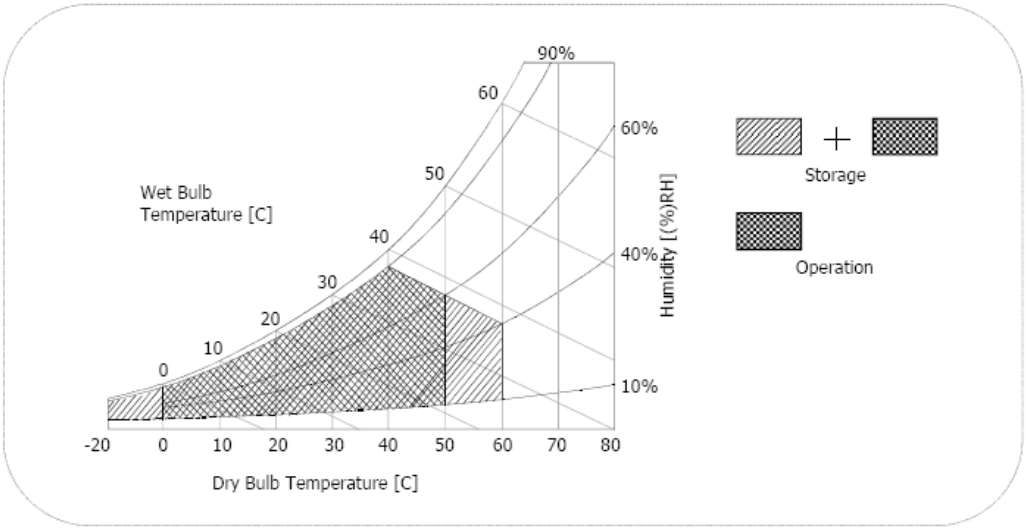
The following are maximum values which, if exceeded, may cause faulty operation or damage to the unit.

ABSOLUTE RATINGS OF ENVIRONMENT

Parameter	Symbol	Values		Units	Notes
		Min	Max		
Power Input Voltage	V_{LCD}	-0.3	6.0	Vdc	at 25 ± 2°C
Operating Temperature	T_{OP}	0	50	°C	1, 2, 3
Storage Temperature	T_{ST}	-20	60	°C	
Operating Ambient Humidity	H_{OP}	10	90	%RH	
Storage Humidity	H_{ST}	10	90	%RH	
LCM Surface Temperature (Operation)	$T_{Surface}$	0	65	℃	1, 4

Note : 1. Temperature and relative humidity range are shown in the figure below.
Wet bulb temperature should be 39 °C Max, and no condensation of water.
2. Maximum Storage Humidity is up to 40℃, 70% RH only for 4 corner light leakage Mura.
3. Storage condition is guaranteed under packing condition
4. LCM Surface Temperature should be Min. 0℃ and Max. 65℃ under the VLCD=5.0V, fV=60Hz, 25℃ ambient Temp. no humidity control and LED string current is typical value.

FIG.2 Temperature and relative humidity



2.0 Electrical characteristics

TFT LCD Module Power Specification

Input power specifications are as following:

Parameter	Symbol	Values			Unit	Notes
		Min	Typ	Max		
MODULE :						
Power Supply Input Voltage	V_{LCD}	4.5	5	5.5	Vdc	
Permissive Power Input Ripple	V_{dRF}			100	mV_{p-p}	1
Power Supply Input Current	I_{LCD}	-	(790)	(990)	mA	2
		-	(960)	(1200)	mA	3
Power Consumption	$P_{C\ TYP}$	-	(4.0)	(5.0)	Watt	2
	$P_{C\ MAX}$	-	(4.8)	(6.0)	Watt	3
Rush current	I_{RUSH}	-	-	3.0	A	4

Note :

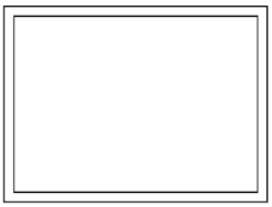
1. Permissive power ripple should be measured under V_{LCD} =5.0V, 25°C, fV(frame frequency)=MAX condition and At that time, we recommend the bandwidth configuration of oscilloscope is to be under 20Mhz. See the next page.

2. The specified current and power consumption are under the V_{LCD}=5.0V, 25± 2°C,fV=60Hz condition whereas Typical Power Pattern [Mosaic] shown in the [Figure 3] is displayed.

3. The current is specified at the maximum current pattern.

4. Maximum Condition of Inrush current :
   The duration of rush current is about 5ms and rising time of power Input is 500us ± 20%.(min.).

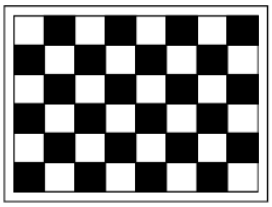
• **Permissive Power input ripple** (V_{LCD} =5.0V, 25°C, fv (frame frequency)=MAX condition)



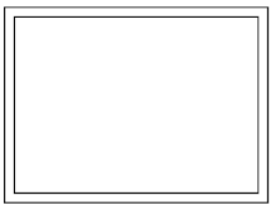
White pattern

Black pattern

• **Power consumption** (V_{LCD} =5V, 25°C, fV (frame frequency=60Hz condition)



Typical power Pattern



Maximum power Pattern

FIG.3 Mosaic pattern & White Pattern for power consumption measurement

Interface Connections

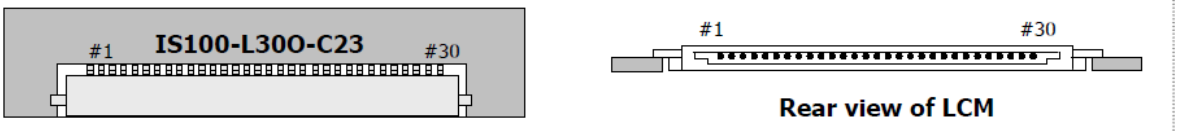
LCD Module

- LCD Connector(CN1) : IS100-L30O-C23 (UJU) , GT103-30S-HF15 (LSM)
- Mating Connector : FI-X30C2L (Manufactured by JAE) or Equivalent

Table 3. MODULE CONNECTOR(CN1) PIN CONFIGURATION

No	Symbol	Description	No	Symbol	Symbol
1	FR0M	Minus signal of odd channel 0 (LVDS)	16	SR1P	Plus signal of even channel 1 (LVDS)
2	FR0P	Plus signal of odd channel 0 (LVDS)	17	GND	Ground
3	FR1M	Minus signal of odd channel 1 (LVDS)	18	SR2M	Minus signal of even channel 2 (LVDS)
4	FR1P	Plus signal of odd channel 1 (LVDS)	19	SR2P	Plus signal of even channel 2 (LVDS)
5	FR2M	Minus signal of odd channel 2 (LVDS)	20	SCLKINM	Minus signal of even clock channel (LVDS)
6	FR2P	Plus signal of odd channel 2 (LVDS)	21	SCLKINP	Plus signal of even clock channel (LVDS)
7	GND	Ground	22	SR3M	Minus signal of even channel 3 (LVDS)
8	FCLKINM	Minus signal of odd clock channel (LVDS)	23	SR3P	Plus signal of even channel 3 (LVDS)
9	FCLKINP	Plus signal of odd clock channel (LVDS)	24	GND	Ground
10	FR3M	Minus signal of odd channel 3 (LVDS)	25	NC	No Connection (I2C Serial interface for LCM)
11	FR3P	Plus signal of odd channel 3 (LVDS)	26	NC	No Connection.(I2C Serial interface for LCM)
12	SR0M	Minus signal of even channel 0 (LVDS)	27	ITLC	Interlace Mode Selection
13	SR0P	Plus signal of even channel 0 (LVDS)	28	V_{LCD}	Power Supply +5.0V
14	GND	Ground	29	V_{LCD}	Power Supply +5.0V
15	SR1M	Minus signal of even channel 1 (LVDS)	30	V_{LCD}	Power Supply +5.0V

Note: 1. All GND(ground) pins should be connected together and to Vss which should also be connected to the LCD's metal frame.
2. All V_{LCD} (power input) pins should be connected together.
3. Input Level of LVDS signal is based on the IEA 664 Standard.
4. ITLC is Interlace mode selection pin. (L : Normal Mode, H : Interlace Mode)
If you don't use this pin, it should be connected to GND.



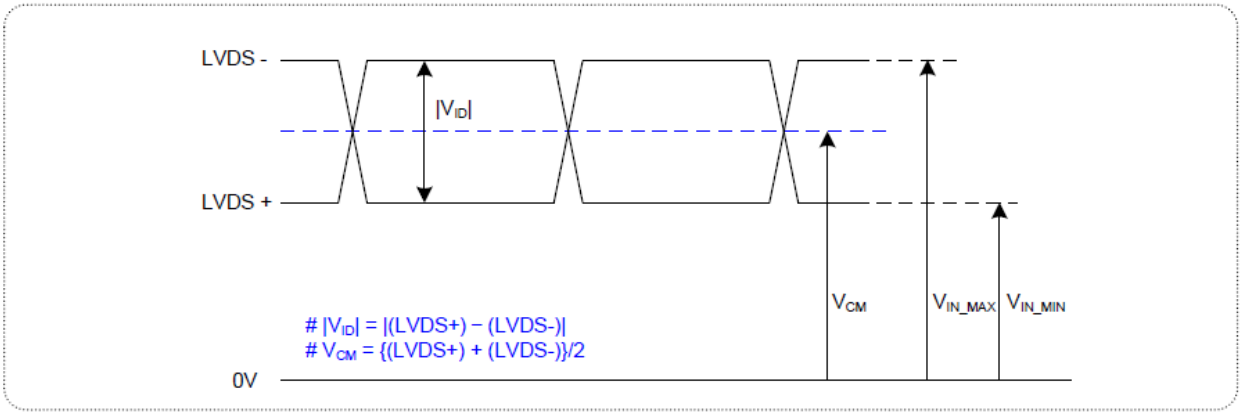
REQUIRED SIGNAL ASSIGNMENT FOR Flat Link (TI:SN75LVDS83) Transmitter

Pin #	Pin Name	Require Signal	Pin #	Pin Name	Require Signal
1	Vcc	Power Supply for TTL Input	29	GND	Ground pin for TTL
2	D5	TTL Input (R7)	30	D26	TTL Input (DE)
3	D6	TTL Input (R5)	31	T_X CLKIN	TTL Level clock Input
4	D7	TTL Input (G0)	32	PWR DWN	Power Down Input
5	GND	Ground pin for TTL	33	PLL GND	Ground pin for PLL
6	D8	TTL Input (G1)	34	PLL Vcc	Power Supply for PLL
7	D9	TTL Input (G2)	35	PLL GND	Ground pin for PLL
8	D10	TTL Input (G6)	36	LVDS GND	Ground pin for LVDS
9	Vcc	Power Supply for TTL Input	37	TxOUT3 +	Positive LVDS differential data output 3
10	D11	TTL Input (G7)	38	TxOUT3 −	Negative LVDS differential data output 3
11	D12	TTL Input (G3)	39	T_X CLKOUT +	Positive LVDS differential clock output
12	D13	TTL Input (G4)	40	T_X CLKOUT −	Negative LVDS differential clock output
13	GND	Ground pin for TTL	41	T_X OUT2 +	Positive LVDS differential data output 2
14	D14	TTL Input (G5)	42	T_X OUT2 −	Negative LVDS differential data output 2
15	D15	TTL Input (B0)	43	LVDS GND	Ground pin for LVDS
16	D16	TTL Input (B6)	44	LVDS Vcc	Power Supply for LVDS
17	Vcc	Power Supply for TTL Input	45	T_X OUT1 +	Positive LVDS differential data output 1
18	D17	TTL Input (B7)	46	T_X OUT1 −	Negative LVDS differential data output 1
19	D18	TTL Input (B1)	47	T_X OUT0 +	Positive LVDS differential data output 0
20	D19	TTL Input (B2)	48	T_X OUT0 −	Negative LVDS differential data output 0
21	GND	Ground pin for TTL Input	49	LVDS GND	Ground pin for LVDS
22	D20	TTL Input (B3)	50	D27	TTL Input (R6)
23	D21	TTL Input (B4)	51	D0	TTL Input (R0)
24	D22	TTL Input (B5)	52	D1	TTL Input (R1)
25	D23	TTL Input (RSVD)	53	GND	Ground pin for TTL
26	Vcc	Power Supply for TTL Input	54	D2	TTL Input (R2)
27	D24	TTL Input (HSYNC)	55	D3	TTL Input (R3)
28	D25	TTL Input (VSYNC)	56	D4	TTL Input (R4)

Notes : 1. Refer to LVDS Transmitter Data Sheet for detail descriptions.
2. 7 means MSB and 0 means LSB at R,G,B pixel data

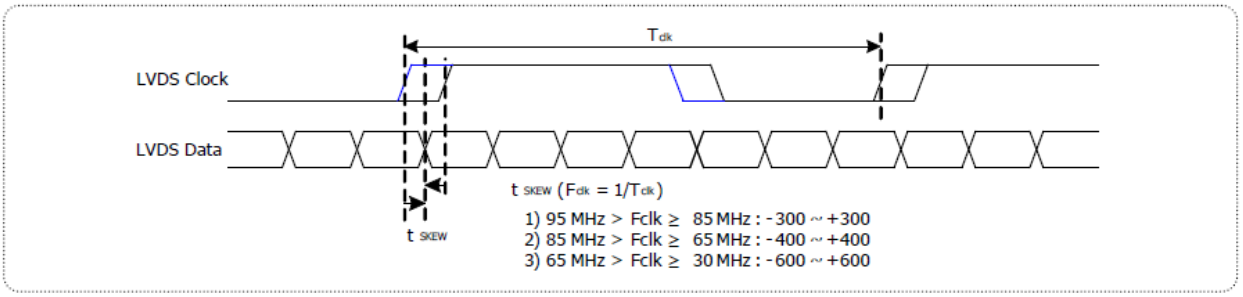
LVDS Input characteristics

1. DC Specification

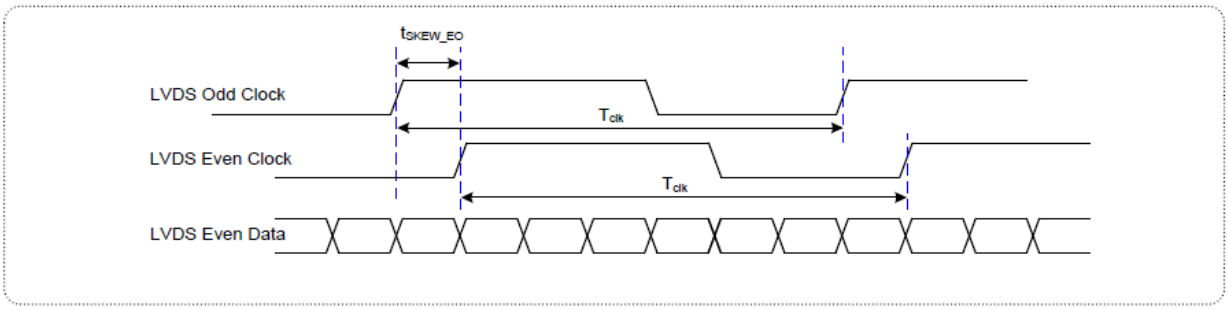


Description	Symbol	Min	Max	Unit	Notes
LVDS Differential Voltage	$\|V_{ID}\|$	200	600	mV	-
LVDS Common mode Voltage	V_{CM}	1.0	1.5	V	-
LVDS Input Voltage Range	V_{IN}	0.7	1.8	V	-
Change in common mode Voltage	ΔV_{CM}	-	250	mV	-

2. AC Specification


Tclk
LVDS Clock
LVDS Data
t SKEW (Fclk = 1/Tclk)
t SKEW
1) 95 MHz > Fclk ≥ 85 MHz : -300 ~ +300
2) 85 MHz > Fclk ≥ 65 MHz : -400 ~ +400
3) 65 MHz > Fclk ≥ 30 MHz : -600 ~ +600

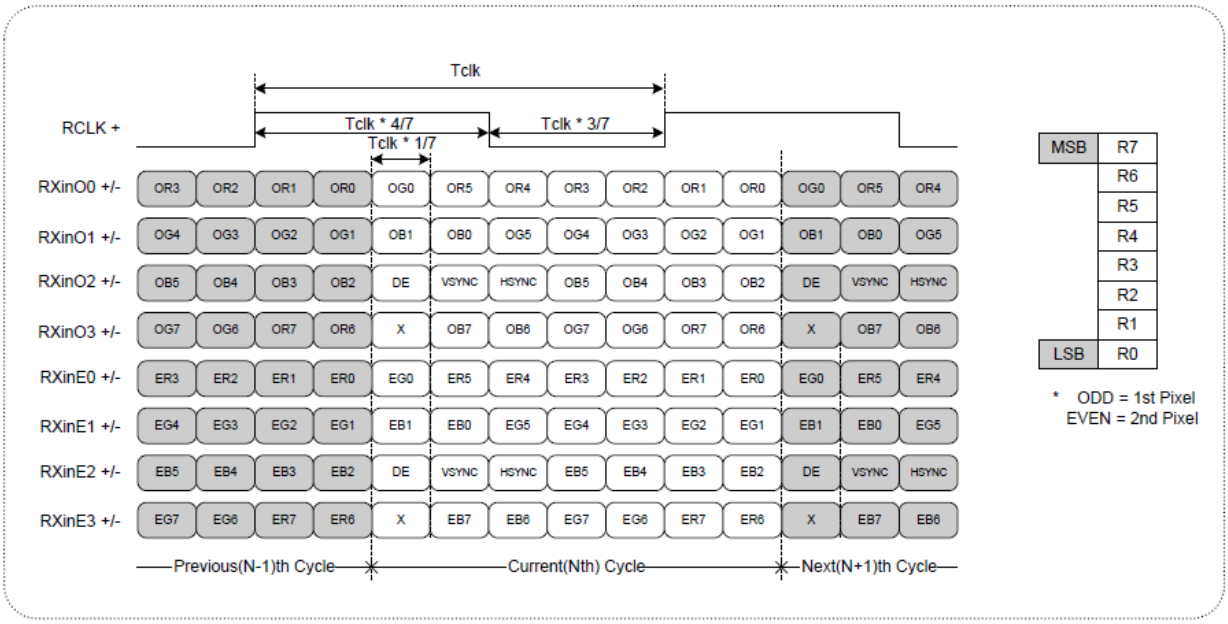
Description	Symbol	Min	Max	Unit	Notes
LVDS Clock to Data Skew Margin	t_{SKEW}	- 300	+ 300	ps	95MHz > Fclk ≥ 85MHz
	t_{SKEW}	- 400	+ 400	ps	85MHz > Fclk ≥ 65MHz
	t_{SKEW}	- 600	+ 600	ps	65MHz > Fclk ≥ 30MHz
LVDS Clock to Clock Skew Margin (Even to Odd)	t_{SKEW_EO}	- 1/7	+ 1/7	T_{clk}	-



< Clock skew margin between channel >

3. Data Format

1) LVDS 2 Port


Tclk
RCLK +
Tclk * 4/7
Tclk * 3/7
Tclk * 1/7
RXinO0 +/- OR3 OR2 OR1 OR0 OG0 OR5 OR4 OR3 OR2 OR1 OR0 OG0 OR5 OR4
RXinO1 +/- OG4 OG3 OG2 OG1 OB1 OB0 OG5 OG4 OG3 OG2 OG1 OB1 OB0 OG5
RXinO2 +/- OB5 OB4 OB3 OB2 DE VSYNC HSYNC OB5 OB4 OB3 OB2 DE VSYNC HSYNC
RXinO3 +/- OG7 OG6 OR7 OR6 X OB7 OB6 OG7 OG6 OR7 OR6 X OB7 OB6
RXinE0 +/- ER3 ER2 ER1 ER0 EG0 ER5 ER4 ER3 ER2 ER1 ER0 EG0 ER5 ER4
RXinE1 +/- EG4 EG3 EG2 EG1 EB1 EB0 EG5 EG4 EG3 EG2 EG1 EB1 EB0 EG5
RXinE2 +/- EB5 EB4 EB3 EB2 DE VSYNC HSYNC EB5 EB4 EB3 EB2 DE VSYNC HSYNC
RXinE3 +/- EG7 EG6 ER7 ER6 X EB7 EB6 EG7 EG6 ER7 ER6 X EB7 EB6
Previous(N-1)th Cycle
Current(Nth) Cycle
Next(N+1)th Cycle
MSB R7
R6
R5
R4
R3
R2
R1
LSB R0
* ODD = 1st Pixel
EVEN = 2nd Pixel

< LVDS Data Format >

Signal Timing Specifications

This is signal timing required at the input of the TMDS transmitter. All of the interface signal timing should be satisfied with the following specifications for it's proper operation.

TIMING TABLE

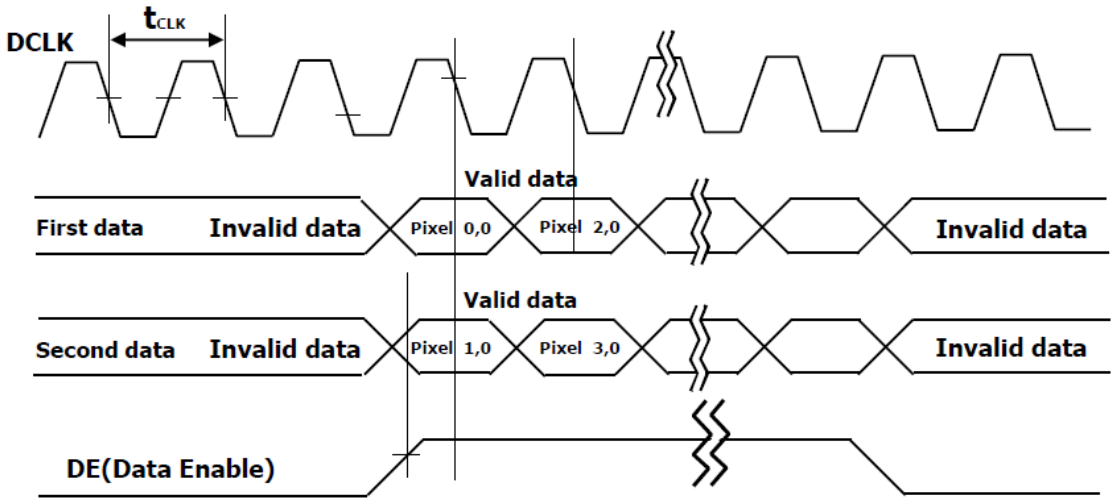
ITEM	Symbol		Min	Typ	Max	Unit	Note
DCLK	Period	tCLK	11.43	13.89	16.7	ns	
	Frequency	-	60	72	87.5	MHz	5
Hsync	Period	tHP	1024	1088	1120	tCLK	
	Horizontal Valid	tHV	960	960	960	tCLK	
	Horizontal Blank	tHB	64	128	160		
	Frequency	fH	64	66	83	KHz	
	Width	tWH	16	32	48	tCLK	
	Horizontal Back Porch	tHBP	32	48	64		
	Horizontal Front Porch	tHFP	16	48	48		
Vsync	Period	tVP	1090	1100	1160	tHP	
	Vertical Valid	tVV	1080	1080	1080	tHP	
	Vertical Blank	tVB	10	20	80	tHP	
	Frequency	fV	50	60	75	Hz	
	Width	tWV	2	4	16	tHP	
	Vertical Back Porch	tVBP	5	8	32		
	Vertical Front Porch	tVFP	3	8	32		

Note: Hsync period and Hsync width-active should be even number times of tCLK. If the value is odd number times of tCLK, display control signal can be asynchronous. In order to operate this LCM a Hsync, Vsyn, and DE(data enable) signals should be used.

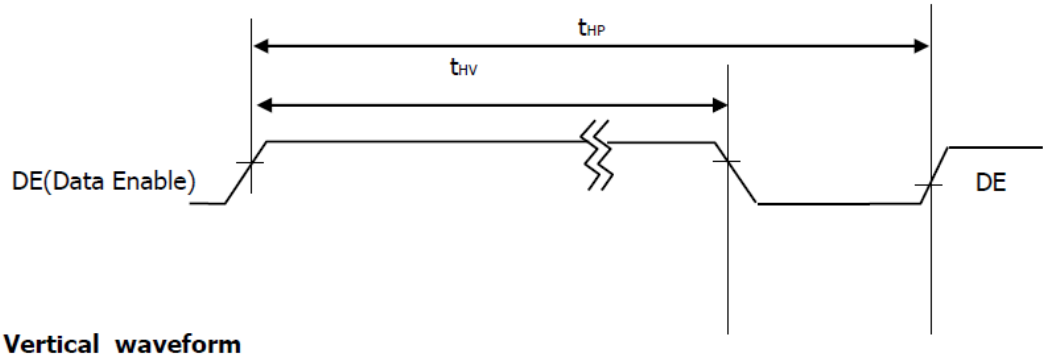
1. The performance of the electro-optical characteristics may be influenced by variance of the vertical refresh rates.
2. Vsync and Hsync should be keep the above specification.
3. Hsync Period, Hsync Width, and Horizontal Back Porch should be any times of of character number(4).
4. The polarity of Hsync, Vsync is not restricted.
5. The Max frequency of 1920X1080 resolution is 82.5Mhz

Signal Timing Waveforms

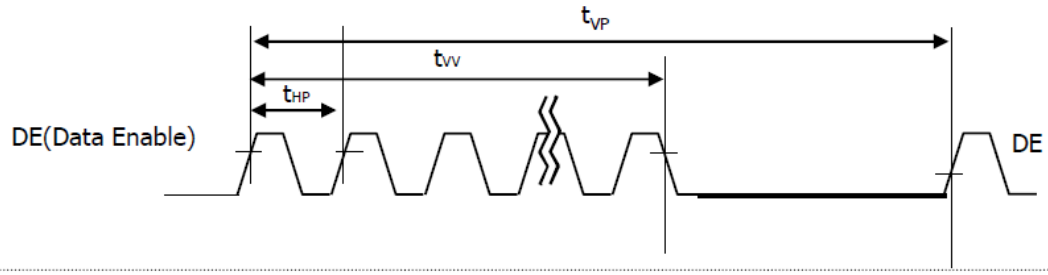
1. DCLK , DE, DATA waveforms



2. Horizontal waveform



3. Vertical waveform



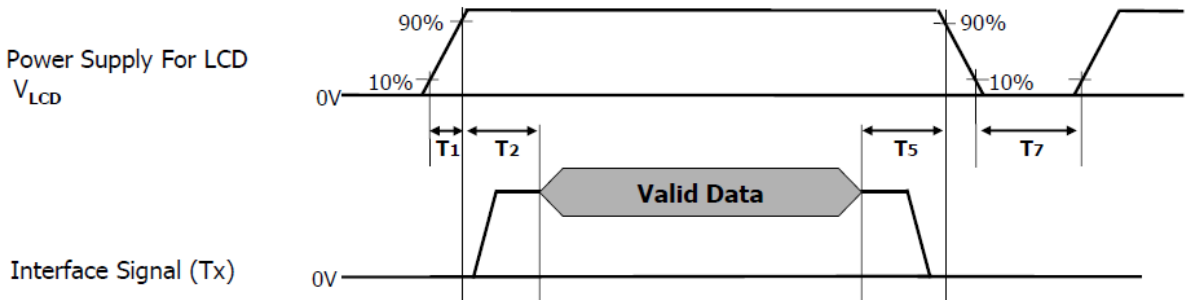
Color Input Data Reference

The Brightness of each primary color(red,green,blue) is based on the 8-bit gray scale data input for the color; the higher the binary input, the brighter the color. The table below provides a reference for color versus data input.

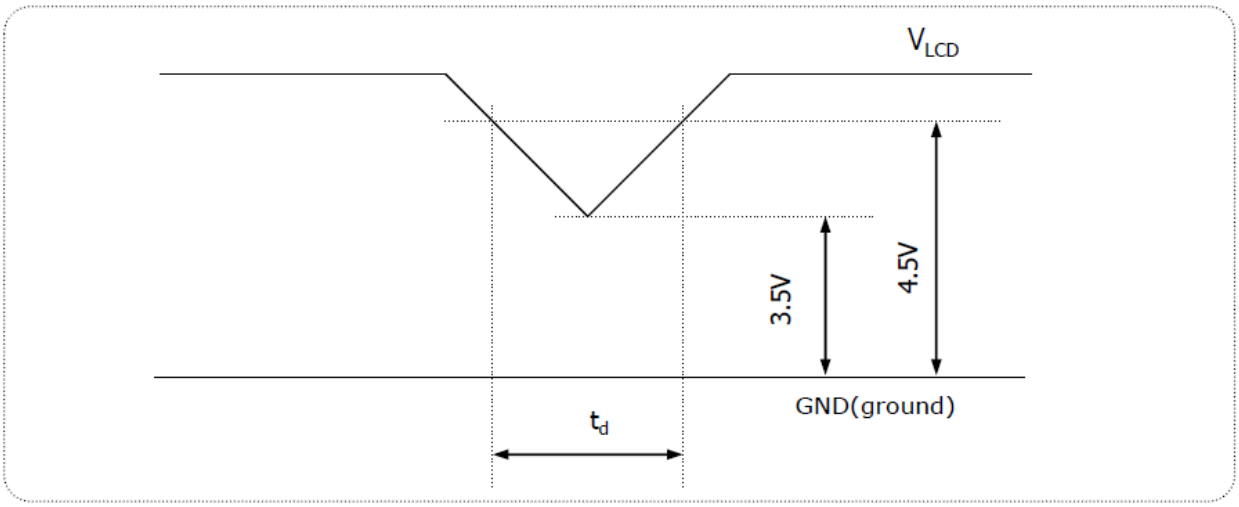
COLOR DATA REFERENCE

Color		Input Color Data																							
		RED								GREEN								BLUE							
		MSB							LSB	MSB							LSB	MSB							LSB
		R7	R6	R5	R4	R3	R2	R1	R0	G7	G6	G5	G4	G3	G2	G1	G0	B7	B6	B5	B4	B3	B2	B1	B0
Basic Color	Black	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	Red (255)	1	1	1	1	1	1	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	Green (255)	0	0	0	0	0	0	0	0	1	1	1	1	1	1	1	1	0	0	0	0	0	0	0	0
	Blue (255)	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	1	1	1	1	1	1	1
	Cyan	0	0	0	0	0	0	0	0	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
	Magenta	1	1	1	1	1	1	1	1	0	0	0	0	0	0	0	0	1	1	1	1	1	1	1	1
	Yellow	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	0	0	0	0	0	0	0	0
	White	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
RED	RED (000) Dark	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	RED (001)	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	...					...								...								...			
	RED (254)	1	1	1	1	1	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	RED (255)	1	1	1	1	1	1	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
GREEN	GREEN (000) Dark	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	GREEN (001)	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0
	...					...								...								...			
	GREEN (254)	0	0	0	0	0	0	0	0	1	1	1	1	1	1	1	0	0	0	0	0	0	0	0	0
	GREEN (255)	0	0	0	0	0	0	0	0	1	1	1	1	1	1	1	1	0	0	0	0	0	0	0	0
BLUE	BLUE (000) Dark	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	BLUE (001)	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1
	...					...								...								...			
	BLUE (254)	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	1	1	1	1	1	1	0
	BLUE (255)	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	1	1	1	1	1	1	1

Power Sequence



VLCD Power Dip Condition



1) Dip condition

$3.5V \leq V_{LCD} < 4.5V$, $t_d \leq 20ms$

2) $V_{LCD} < 3.5V$

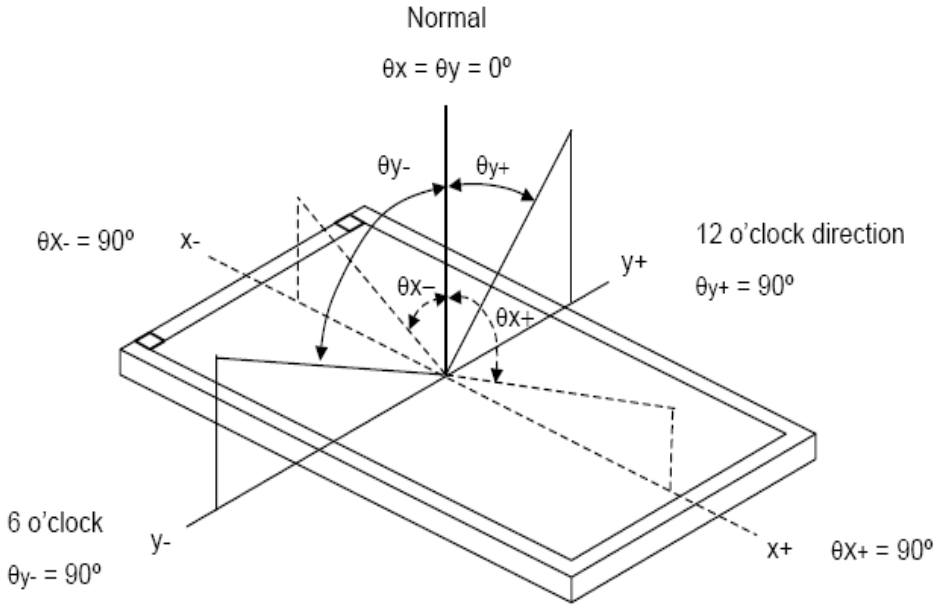
V_{LCD}-dip conditions should also follow the Power On/Off conditions for supply voltage.

3.0 OPTICAL SPECIFICATION

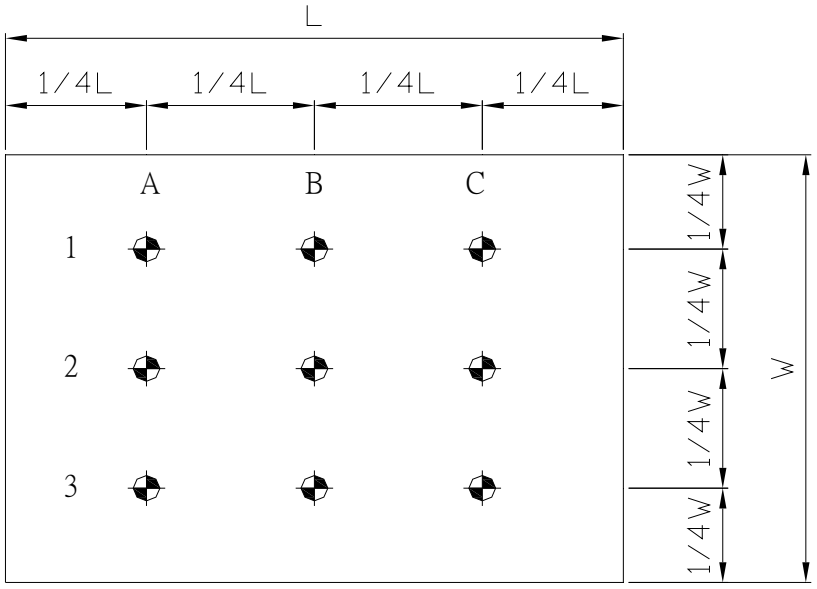
Item		Symbol	Min.	Typ.	Max.	Unit	Note
Contrast Ratio		CRn	-		-	-	[1]
Luminance of White		L_{AVE}	800	1000	-	cd/m_2	[2]
Response Time		τDRV	-	5	-	ms	[3]
Uniform		Lu	75	80		%	
Chromaticity	Red	Rx	-	0.6621 (± 0.03)	-	-	
		Ry	-	0.3308 (± 0.03)	-	-	
	Green	Gx	-	0.3078 (± 0.03)	-	-	
		Gy	-	0.6114 (± 0.03)	-	-	
	Blue	Bx	-	0.1434 (± 0.03)	-	-	
		By	-	0.0674 (± 0.03)	-	-	
	White	Wx	-	0.3078 (± 0.03)	-	-	
		Wy	-	0.3456 (± 0.03)	-	-	
Viewing Angle	x axis, right(φ=0°)	θ_r	-	89	-	Degree	-
	x axis, left(φ=180°)	θ_l	-	89	-		
	y axis, up(φ=90°)	θ_u	-	89	-		
	y axis, down (φ=0°)	θ_d	-	89	-		

Test Mode：

（**1**） Definition of Viewing Angle（θ_x，θ_y）：

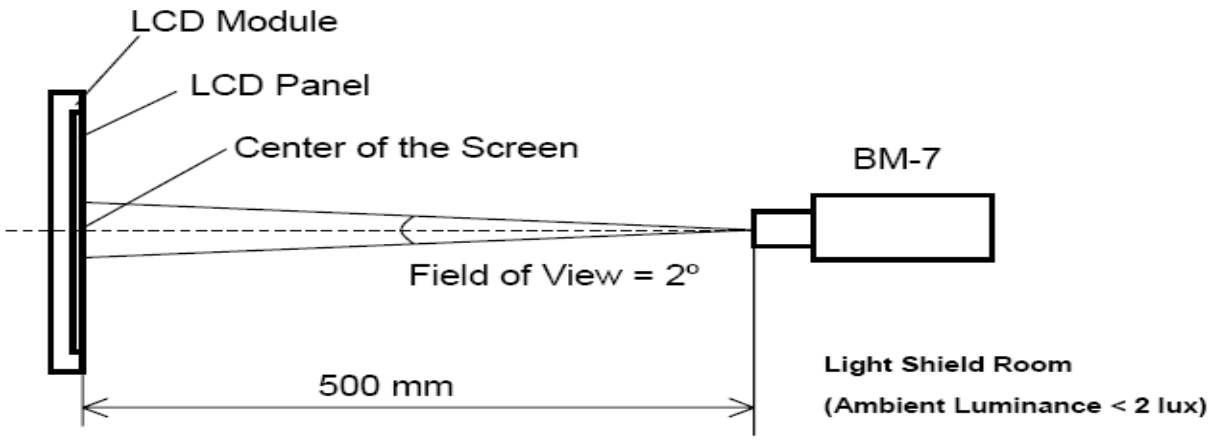


（**2**） Definition of Test Point：

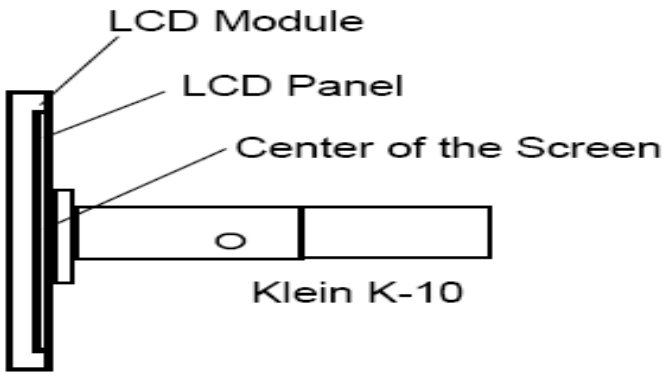


Active Area

（3）BM-7 Measurement Setup:



（4）Klein K-10 Measurement Setup:



4.0 AD6038GDP SPECIFICATIONS & OSD Functions

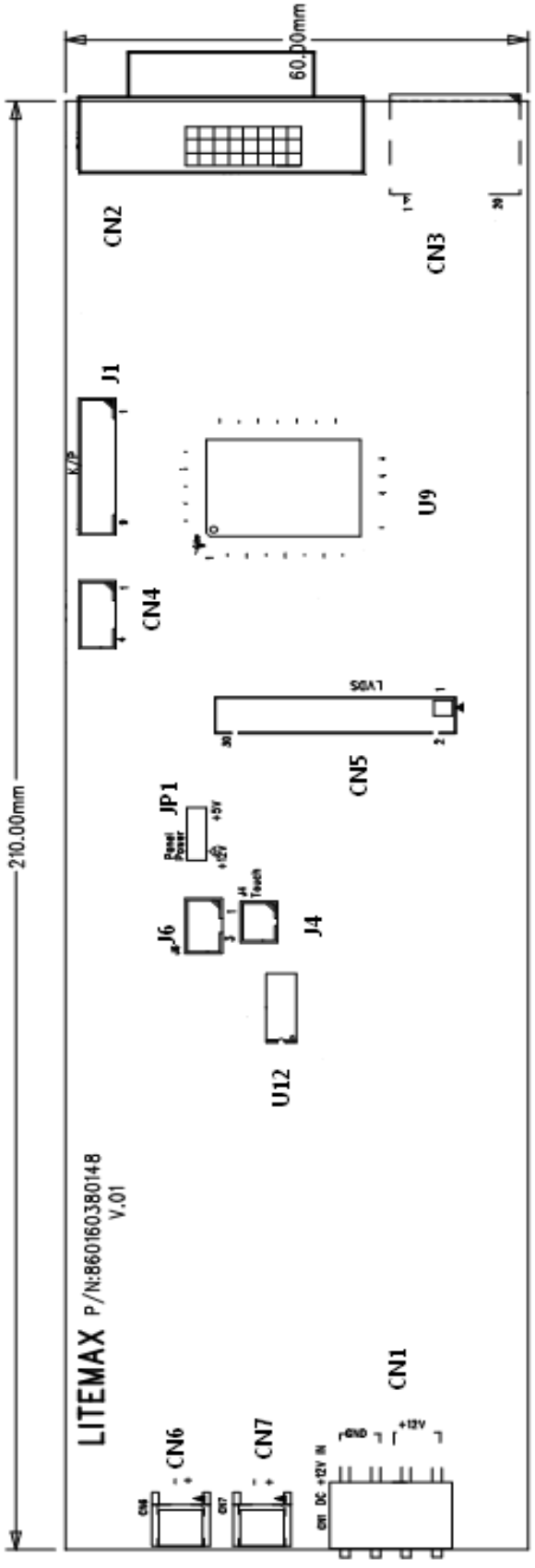
We developed this A/D board to support industrial high brightness and commercial applications. This A/D board has many functions. It has a display port and DVI-I input. Rev.1 is European RoHS compliant.

General Description

- **Max Resolution Up To WUXGA+**
- **Analog RGB Input up to 205MHz**
- **ULTRA-RELIABLE DVI-I INPUT**
- **Dual/single LVDS interface**
- **Support Panel DC5V or 12V Output**
- **OSD Control**
- **Inverter Analog or PWM Dimming Control.**
- **LED backlight driver on board.**
- **Input Power 12Vdc**
- **Display port input. (Support display port 1.1a)**

Outline Dimensions

AD6038GDP 210mmX60mm



AD6038GDP Board Pin Define

CN5: Panel connector

Pin No.	Function	Pin No.	Function
1	RxO0-	16	RxE1+
2	RxO0+	17	RxE2-
3	RxO1-	18	RxE2+
4	RxO1+	19	RxEC-
5	RxO2-	20	RxEC+
6	RxO2+	21	RxE3-
7	RxOC-	22	RxE3+
8	RxOC+	23	GND
9	RxO3-	24	GND
10	RxO3+	25	GND
11	GND	26	GND
12	GND	27	NC
13	RxE0-	28	PANEL-VCC
14	RxE0+	29	PANEL-VCC
15	RxE1-	30	PANEL-VCC

CN2: DVI-1 INPUT Connector

Pin No.	Function	Pin No.	Function	Pin No.	Function
1	T.M.D.S. Data2-	9	T.M.D.S. Data1-	17	T.M.D.S. Data0-
2	T.M.D.S. Data2+	10	T.M.D.S. Data1+	18	T.M.D.S. Data0+
3	T.M.D.S. Data2/4 Shield	11	T.M.D.S Data1/3 Shield	19	T.M.D.S. Data0/5 Shield
4	T.M.D.S. Data4-	12	T.M.D.S. Data3-	20	T.M.D.S. Data5-
5	T.M.D.S. Data4+	13	T.M.D.S. Data3+	21	T.M.D.S. Data5+
6	DDC Clock	14	+5V Power	22	T.M.D.S. Clock Shield
7	DDC Data	15	Ground (for +5V)	23	T.M.D.S. Clock+
8	Vertical SYNC.	16	Hot Plug Detect	24	T.M.D.S. Clock-
C1	Red input	C2	Green input	C3	Blue input
C4	Horizontal SYNC.	C5	Analog GND		

CN3: DISPLAY PORT

Pin No.	Function	Pin No.	Function
1	RX3-	11	GND
2	GND	12	RX0+
3	RX3+	13	GND
4	RX2-	14	GND
5	GND	15	AUX+
6	RX2+	16	GND
7	RX1-	17	AUX-
8	GND	18	Hot plug detect
9	RX1+	19	GND
10	RX0-	20	DP +5V

CN1: Power Jack (12V)

Pin No.	Function	Pin No.	Function
1	12VDC	2	12VDC
3	GND	4	GND

J4: Touch Power connector

Pin No.	Function	Pin No.	Function
1	12V or 5V	2	GND

J6: Control LID connector

Pin No.	Function	Pin No.	Function
1	ON/OFF	2	Dimming
3	GND		

CN6, CN7: Backlight LED (2PIN 2.0mm)

Pin No.	Function	Pin No.	Function
1	LED+	2	LED-

J1: Key Pad (9PIN 2.0mm)

Pin No.	Function	Pin No.	Function
1	POWER KEY	6	MENU KEY
2	GREEN LED	7	AUTO KEY
3	RED LED	8	GND
4	DOWN KEY	9	GND
5	UP KEY		

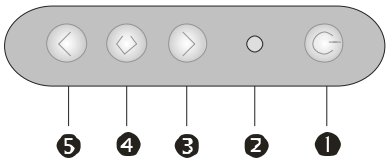
JP1: Panel Power

Pin No.	Function	Pin No.	Function
1	12VDC	2	COMMON
3	5V		

CN4: RS232 Connector

Pin No.	Function	Pin No.	Function
1	5v	2	UART TX
3	UART RX	4	GND

MEMBRANE CONTROL BUTTOM



❶**POWER SWITCH:** Pushing the power switch will turn the monitor on. Pushing it again to turn the monitor off.

❷**Power LED:** Power ON-Green / Power off-No.

❸**Up Key >:** Increase item number or value of the selected item.

❹**Menu Key:** Enter to the OSD adjustment menu. It also used for go back to previous menu for sub-menu, and the change data don't save to memory.

❺**Down Key <:** Decrease item number or item value when OSD is on. When OSD is off, it is hot key for input switch between VGA, AV, and S-video.

Screen Adjustment Operation Procedure

1. **Entering the screen adjustment**

   The setting switches are normally at stand-by. Push the **Menu Key** once to display the main menu of the screen adjustment. The adjustable items will be displayed in the main menu.

2. **Entering the settings**

   Use the **Down Key <** and **Up Key >** buttons to select the desired setting icon and push the SELECT button to enter sub-menu.

3. **Change the settings**

   After the sub-menu appears, use the **Down Key <** and **Up Key >** buttons to change the setting values.

4. **Save**

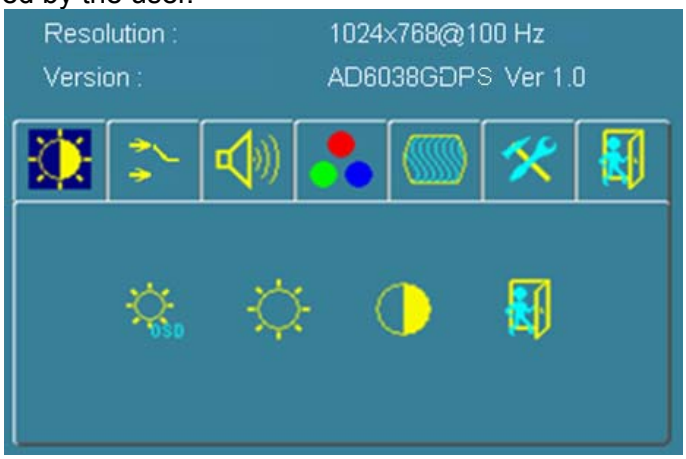
   After finishing the adjustment, push the SELECT button to memorize the setting.

5. **Return & Exit the main menu**

   Exit the screen adjustment; push the "MENU" button. When no operation is done around 30 sec (default OSD timeout), it goes back to the stand-by mode and no more switching is accepted except MENU to restart the setting.

OSD menu

By pressing the “menu” button, you will see the below picture. Across from timing you will see resolution, frequency, and V-frequency of the panel. Version shows the firmware control version. These cannot be altered by the user.



There are 7 sub menus within the OSD user interface:
Brightness, Signal Select, Sound, Color, Image, Tools, and Exit.

When you press the “menu” button, you enter the “Brightness” sub directory. In this directory, you will see 4 selections:

press ’’right’’ key, you can go into the **OSD Brightness**.

OSD Brightness：

Press the “menu” once, to adjust the brightness. Press “left” to dim down the brightness to “0”, press “right” to increase the brightness to “100”

Contrast：

Press “menu” and “right” buttons to adjust the contrast from “0” to “100”.

To adjust from “100” to “0”, press “menu” and the “left” buttons.

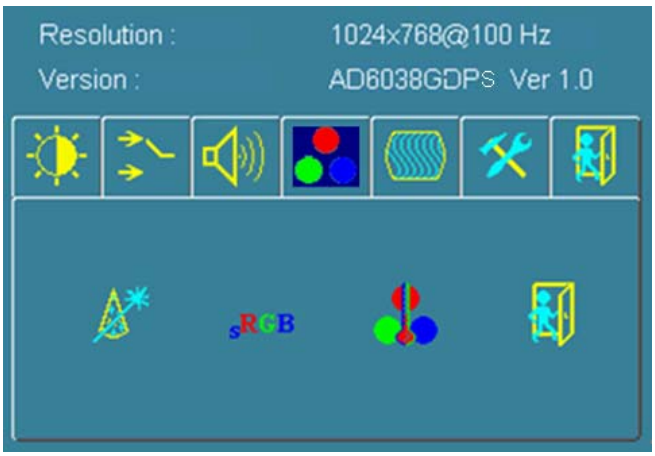
Exit: back to the beginning menu.

VGA **Analog:** RGB/VGA input

DVI **Digital:** DVI input

DP **DP:** DisplayPort input

Exit **Exit:** back to the beginning menu.



Auto Color：By navigating over to the “Auto Color” option, optimal color performance is invoked.

SRGB: Windows standard color setting

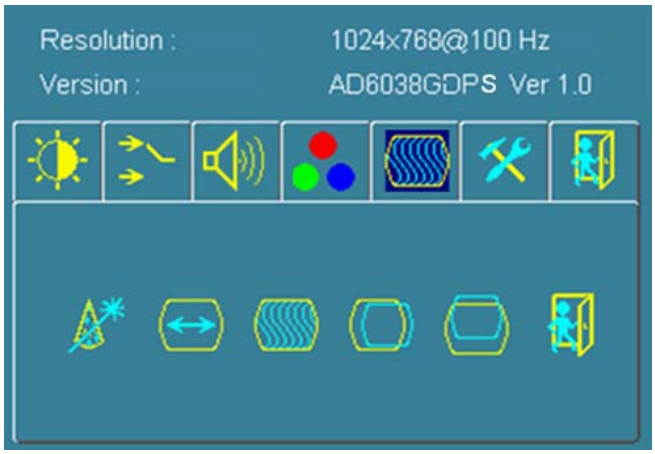
Color Temperature: You have 4 options in this selection
.

Color Temperature User Define: Default is 100 for “R”, “G”, and “B”.

Color Tempture_6500K: Warm color scheme

Color Tempture_93OOK: Cold color scheme

Exit: back to the beginning menu.



Auto Adjust:
Choose this option and the AD6038 will adjust to the optimal horizontal and vertical frequency.

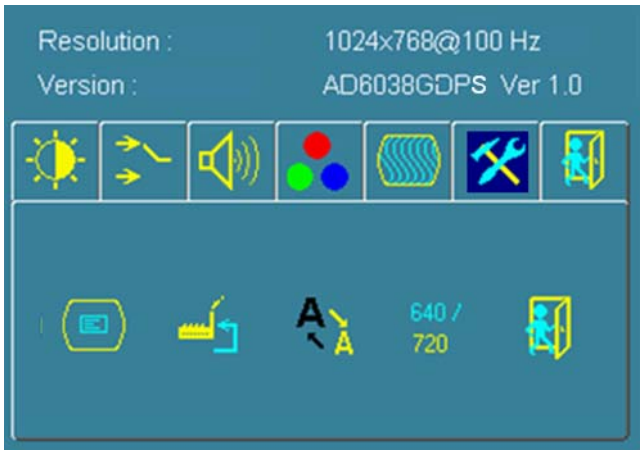
Clock: If you are not satisfied with the Auto tune result, you can adjust manually by pressing “Clock”. Using this will make the image wider.

Phase: If “double images” appear around the characters, choose “Phase” to remove them..

HPos: You can shift the screen horizontally using this function.

Vpos: You can shift the screen vertically using this function.

Exit: back to the beginning menu.



OSD Control: Selecting this option, brings you to 5 more options:

Osd_time: Select time for the OSD user interface to stay on screen, for 2 sec. to 16 sec. Default is 6 sec.

Osd_HPos: Moves the OSD user interface horizontally on screen.

Osd_VPos: Moves the OSD user interface vertically on screen.

Osd_Rotation: Rotates the OSD user interface Rotation(0˚/90˚/180˚/270˚) on screen.

Exit: You can exit this sub menu back to the beginning

Factory_Reset: By pressing this, the screen will revert to factory settings, and the previous settings will be deleted.

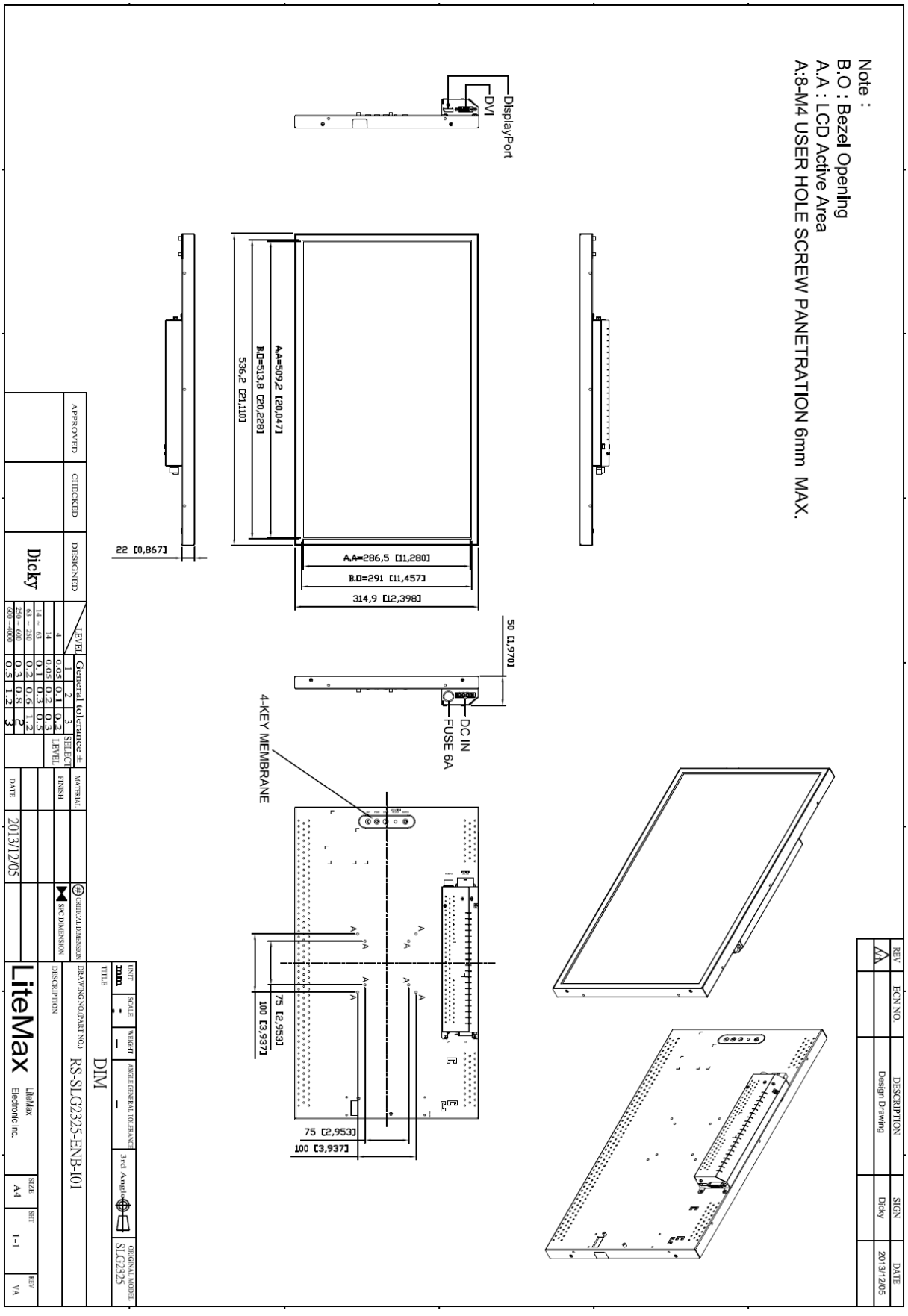
Sharpness: Sharpen characters.

Dos_mode/Gxf_mode: For some old programs which use 640x400 and 720x400 (DOS Mode and graphics mode), This option needs to be selected manually.

Exit: back to the normal screen

5.0 MECHANICAL DRAWING

SLG2325



6.0 PRECAUTIONS

HANDLING PRECAUTIONS

(1) The module should be assembled into the system firmly by using every mounting hole. Be careful not to twist or bend the module.
(2) While assembling or installing modules, it can only be in the clean area. The dust and oil may cause electrical short or damage the polarizer.
(3) Use fingerstalls or soft gloves in order to keep display clean during the incoming inspection and assembly process.
(4) Do not press or scratch the surface harder than a HB pencil lead on the panel because the polarizer is very soft and easily scratched.
(5) If the surface of the polarizer is dirty, please clean it by some absorbent cotton or soft cloth. Do not use Ketone type materials (ex. Acetone), Ethyl alcohol, Toluene, Ethyl acid or Methyl chloride. It might permanently damage the polarizer due to chemical reaction.
(6) Wipe off water droplets or oil immediately. Staining and discoloration may occur if they left on panel for a long time.
(7) If the liquid crystal material leaks from the panel, it should be kept away from the eyes or mouth. In case of contacting with hands, legs or clothes, it must be washed away thoroughly with soap.
(8) Protect the module from static electricity, it may cause damage to the C-MOS Gate Array IC.
(9) Do not disassemble the module.
(10) Do not pull or fold the lamp wire.
(11) Pins of I/F connector should not be touched directly with bare hands.

STORAGE PRECAUTIONS

(1) High temperature or humidity may reduce the performance of module. Please store LCD module within the specified storage conditions.
(2) It is dangerous that moisture come into or contacted the LCD module, because the moisture may damage LCD module when it is operating.
(3) It may reduce the display quality if the ambient temperature is lower than 10 ºC. For example, the response time will become slowly, and the starting voltage of lamp will be higher than the room temperature.

OPERATION PRECAUTIONS

(1) Do not pull the I/F connector in or out while the module is operating.
(2) Always follow the correct power on/off sequence when LCD module is connecting and operating. This can prevent the CMOS LSI chips from damage during latch-up.